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27299	7590	07/08/2004	EXAMINER	
GAZDZINSKI & ASSOCIATES 11440 WEST BERNARDO COURT, SUITE 375 SAN DIEGO, CA 92127			WOOD, WILLIAM H	
			ART UNIT	PAPER NUMBER
			2124	6

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,423

Applicant(s)

PENNELLO ET AL.

Examiner

William H. Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-19 are pending and have been examined.

Drawings

1. The drawings are objected to because multipart figures should be labeled with some sort of ascending letters or numerals (for example: Figure 5a, Figure 5b, Figure 5c). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 5-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In dependent claim 5 includes limitation "excluded set of data", which is not described in such a manner as to enable one of ordinary skill in the art to make and/or use the instant subject matter. Applicant's specification (page 9, lines 14-23) describes an illogical sequence of events in which an element is included in either an excluded set or an included set based upon a criterion. The criterion is whether an element is included in an excluded set. Thus, by being "included" within the excluded set the element should be placed in an "included set". See below, second paragraph and prior art rejections, for interpretation of claim language.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 5-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In dependent claim 5 includes limitation "excluded set of data", which is not described in such a manner as to particularly and distinctly claim the instant subject matter. Thus the limitation is interpreted as stating a set of data either being empty (excluded set) or not empty (included set), see below rejections.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by **Shapiro et al.** (USPN 4,899,128).

Claim 3

Shapiro disclosed a method of analyzing a plurality of strings of data derived from at least one data processing device (*column 1, lines 5-10*), comprising:

- ♦ initializing said data, said act of initializing including creating a symbol array (*column 1, lines 35-44; figure 1; initialization in the sense that an operation is performed on the strings before comparison*);
- ♦ analyzing said strings of data based at least in part on said symbol array (*column 2, lines 18-43*); and
- ♦ identifying at least one relationship between one or more of said data within one or more of said strings (*column 2, lines 18-43*).

8. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by **Kernighan et al.**, "The Practice of Programming".

Claim 5

Kernighan disclosed a method of identifying differences within a plurality of data inputs associated with at least one data processor (*page 149-150, note regression testing*), comprising:

- ♦ providing a plurality of data inputs having at least one data string associated therewith (*page 149-150, second paragraph under "Automate regression testing" section*);
- ♦ processing those inputs of said plurality that do not share any of said at least one data strings with other of said inputs (*processing being sufficiently broad as to have virtually no meaning; the strings are by default "processed" in some manner by being involved in a method/process*);
- ♦ determining whether an excluded set of data is empty (*excluded set of data is interpreted as a set of data which is empty; thus the excluded set of data is inherently determined empty; further, the set of data is interpreted as the set holding inputs to be "worked" upon, which must inherently exist in **Kernighan** as the set of all inputs*); and
- ♦ if said excluded set of data is not empty, identifying said differences using respective members of an included set as said plurality of inputs (*included set*

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of data is interpreted as being the above set of data which is not empty or in other words having inputs; given the above two limitations, when there exists inputs to be "worked" upon they are in the data set thus making it not empty and then "work" must be performed on those inputs).

10. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by **Baird et al.** (USPN 5,848,264).

Claim 19

Baird disclosed a multi-processor integrated circuit device (*figures 7-8*), comprising:

- ♦ a first processor core adapted to run a first software process, said first software process adapted to generate a first string of data (*column 2, lines 38-40*);
- ♦ a second processor core adapted to run a second software process said second software process adapted to generate a second string of data (*column 2, lines 38-40*);
- ♦ at least one data interface, wherein said first and second processors respectively transfer data comprising said first and second strings to an external debug process adapted to identify similarities and differences between the operation of said first and second [software] processes on said first and second processors, via said at least one interface (*figures 7-8; and column 6, lines 32-39*).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kernighan et al.**, "The Practice of Programming" (page 149-150) in view of **Baird et al.** (USPN 5,848,264).

Claim 1

Kernighan disclosed a method of formatting a plurality of strings of data, comprising:

- ♦ initializing the data in each of said strings (*page 149-150, starting the method*);
- ♦ finding the differences between said strings (*page 149-150, section "Automate regression testing"*); and
- ♦ providing said differences in a display to a user (*required of debugging and testing systems*).

Kernighan did not explicitly state *processes running on respective ones of a plurality of digital processors*. **Baird** demonstrated that it was known at the time of invention to debug processes from several CPU cores, digital processors (column 5, lines 16-27; column 6, lines 32-39; figure 3). It would have been obvious to one of ordinary skill in

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the art at the time of invention to implement the comparison debugging/testing of **Kernighan** with multiple processors as found in **Baird's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to increase debug/test capacity for quicker more efficient execution (**Baird**: column 2, lines 38-40).

Claim 15

Kernighan disclosed a method adapted to run at least one software process thereon (*page 149-150*), comprising:

running at least a portion of said at least one software process for a first time (*page 149-150, first paragraph under section "Automate regression testing"*);

obtaining a first output from said at least one process (*page 149-150, first and second paragraph under section "Automate regression testing"*);

running said at least portion of said at least one software process a second time (*page 149-150, first and second paragraph under section "Automate regression testing"*);

obtaining a second output from said at least one process (*page 149-150, first and second paragraph under section "Automate regression testing"*); and

identifying difference within said first and second output (*page 149-150, second paragraph under section "Automate regression testing"*)

Kernighan did not explicitly state designing and modifying a processing device's design. **Baird** demonstrated that it was known at the time of invention to design

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processing devices (column 1, lines 13-21; and column 2, lines 38-40;) and test them.

Kernighan clearly indicated modifying “versions” of a system under test. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the testing automation system of **Kernighan** with testing processing devices and redesigning them as development advanced as suggested by **Baird**’s and **Kernighan**’s teachings. This implementation would have been obvious because one of ordinary skill in the art would be motivated to reduce errors both in code and in hardware (**Baird**: column 1, lines 13-21).

Claim 16

Kernighan and **Baird** disclosed the method of Claim 15, further comprising

- ♦ comparing said differences to at least one predetermined criterion
(**Kernighan**: page 149-150, at least first paragraph under section “Automate regression testing”, last sentence; comparing against expected behavior); and
- ♦ evaluating the acceptability of said modifications based at least in part on said act of comparing (**Kernighan**: page 149-150, at least first paragraph under section “Automate regression testing”, last sentence; determining if appropriate new version).

Claim 17

Kernighan disclosed a method of evaluating the operation of a plurality of software processes (page 149-150), comprising:

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- ♦ generating a first data string using a first of said plurality of software processes (*page 149-150; note third paragraph under "Automate regression testing" section*);
- ♦ generating a second data string using a second of said plurality of software processes (*page 149-150; note third paragraph under "Automate regression testing" section*);
- ♦ inputting said first and second data strings into a debug software process (*page 149-150; note third paragraph under "Automate regression testing" section*);
- ♦ analyzing said first and second data strings using said debug process (*page 149-150; note third paragraph under "Automate regression testing" section*);
and
- ♦ evaluating the operation of said processes based at least in part on said act of analyzing (*page 149-150; note third paragraph under "Automate regression testing" section*)

Kernighan did not explicitly state *processes running on respective ones of a plurality of digital processors*. **Baird** demonstrated that it was known at the time of invention to debug processes from several CPU cores, digital processors (column 5, lines 16-27; column 6, lines 32-39; figure 3). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the comparison debugging/testing of **Kernighan** with multiple processors as found in **Baird's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to

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increase debug/test capacity for quicker more efficient execution (**Baird**: column 2, lines 38-40).

Claim 18

Kernighan and **Baird** disclosed the method of Claim 17, wherein the act of analyzing comprises:

- (i) identifying common patterns within at least one first portion of said first and second data strings (**Kernighan**: page 149-150; note second paragraph under "Automate regression testing" section); and
- (ii) identifying differences within at least one second portion of said first and second data strings (**Kernighan**: page 149-150; note second paragraph under "Automate regression testing" section)

13. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kernighan** et al., "The Practice of Programming" (page 149-150) in view of **Baird** et al. (USPN 5,848,264) as applied above and in further view of **Shapiro** (USPN 4,899,128) in further view of **Aho** et al., "Compilers Principles, Techniques, and Tools".

Claim 2

Kernighan and **Biard** did not explicitly state the method of Claim 1, wherein the act of initializing comprises:

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- ♦ creating a symbol table having a plurality of symbol numbers associated therewith (**Shapiro**: figure 1, column 1, lines 35-44, column 2, lines 58-65);
- ♦ for each of said input strings, determining whether said each string is present in said symbol table (**Shapiro**: column 2, lines 40-44); and
- ♦ if said each string is present in said symbol table, obtaining at least one symbol number for said string from said symbol table (**Shapiro**: column 2, lines 40-44).

Shapiro demonstrated that it was known at the time of invention to perform the above (as noted above). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the testing and comparing system of **Kernighan** and **Biard** with a symbol table as found in **Shapiro**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a common (and thus easily implemented) data structure (symbol tables) for housing information (which must be housed for manipulation of the computer implemented method). Further, **Shapiro** clearly indicates using symbol tables for comparing data (column 1, lines 35-44).

Shapiro did not explicitly state *creating said symbol array having at least one element fore each of said strings*. **Aho** demonstrated that it was known at the time of invention to create an array with elements for multiple strings (page 431, figure 7.32(b)). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the string symbol table system of **Shapiro** with an expandable symbol array

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as found in **Aho's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a data structure capable of flexibility in the face of unknown future string lengths (**Aho**: page 429, paragraph 3, under section 7.6) and efficiency of memory usage (**Aho**: page 431, first paragraph, sentences 2 and 3).

14. Claims 4 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shapiro** (USPN 4,899,128) in further view of **Aho et al.**, "Compilers Principles, Techniques, and Tools".

Claim 4

Shapiro disclosed the method of Claim 3, wherein the act of initializing comprises:

- ♦ creating a symbol table having a plurality of symbol numbers associated therewith (**Shapiro**: figure 1, column 1, lines 35-44, column 2, lines 58-65);
- ♦ for each of said input strings, determining whether said each string is present in said symbol table (**Shapiro**: column 2, lines 40-44); and
- ♦ if said each string is present in said symbol table, obtaining at least one symbol number for said string from said symbol table (**Shapiro**: column 2, lines 40-44).

Shapiro did not explicitly state *creating said symbol array having at least one element fore each of said strings*. **Aho** demonstrated that it was known at the time of invention to create an array with elements for multiple strings (page 431, figure 7.32(b)). It

would have been obvious to one of ordinary skill in the art at the time of invention to implement the string symbol table system of **Shapiro** with an expandable symbol array as found in **Aho's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a data structure capable of flexibility in the face of unknown future string lengths (**Aho**: page 429, paragraph 3, under section 7.6) and efficiency of memory usage (**Aho**: page 431, first paragraph, sentences 2 and 3).

Claim 11

The limitations of claim 11 correspond to the limitations of data processing device claim 12, and as such are rejected in the same manner here.

Claim 12

Shapiro disclosed a data processing device, comprising:

- ♦ a processor adapted to process digital data and execute a computer program (*column 1, background*);
- ♦ a storage device in data communication with said processor (*column 1, background*), said storage device comprising:
 - ♦ a computer readable medium (*column 1, background, the necessary storage device*); and
 - ♦ a computer program stored on said computer readable medium, said program being adapted for analyzing a plurality of strings of data derived

from at least one data processing device according to the method (*column 1, background*) comprising:

- ♦ initializing said data, (*column 1, lines 35-44; figure 1; initialization in the sense that an operation is performed on the strings before comparison*);
- ♦ analyzing said strings of data based at least in part on said symbol array (*column 2, lines 18-43*); and
- ♦ identifying at least one relationship between one or more of said data within one or more of said strings (*column 2, lines 18-43*).

Shapiro did not explicitly state *creating said symbol array having at least one element fore each of said strings*. **Aho** demonstrated that it was known at the time of invention to create an array with elements for multiple strings (page 431, figure 7.32(b)). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the string symbol table system of **Shapiro** with an expandable symbol array as found in **Aho's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a data structure capable of flexibility in the face of unknown future string lengths (**Aho**: page 429, paragraph 3, under section 7.6) and efficiency of memory usage (**Aho**: page 431, first paragraph, sentences 2 and 3).

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15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kernighan et al.**, "The Practice of Programming" (page 149-150) in view of **Aho et al.**, "Compilers Principles, Techniques, and Tools"..

Claim 9

Kernighan disclosed for each of said inputs, adding the input to an excluded set (as indicated above a data set; clearly **Kernighan** adds inputs to the data set as an indication to perform the comparison method upon the input; data set for holding inputs to be "worked" upon).

Kernighan did not explicitly state the method of Claim 5, wherein the act of processing comprises:

- ♦ clearing a symbol counts array;
- ♦ for each of said strings in each of said inputs, incrementing the symbol count;
- ♦ for each of said string in each of said inputs, determining the symbol count for that string; and

Aho demonstrated that it was known at the time of invention to initialize/clear an array to include strings (page 431, figure 7.32(b)) and incrementing and determining a symbol count for a string (required pointer to string location). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the data comparison system of **Kernighan** with symbol array as found in **Aho's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a data structure for storing data to be manipulated as a program

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(computer implemented method) is running, the symbol table/symbol array system is clearly a well known means of accomplishing data storage and thus easily implemented.

16. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shapiro** (USPN 4,899,128) in further view of **Aho** et al., "Compilers Principles, Techniques, and Tools" in further view of **Baird** et al. (USPN 5,848,264).

Claim 13

Shapiro and **Aho** did not explicitly state the device of Claim 12, further comprising a plurality of data interfaces adapted to receive said data strings from respective ones of a plurality of software processes running on respective ones of a plurality of data processors. **Baird** demonstrated that it was known at the time of invention to debug processes from several CPU cores, digital processors and thus interfaces (column 5, lines 16-27; column 6, lines 32-39; figure 3). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the comparison debugging/testing of **Shapiro** and **Aho** with multiple processors as found in **Baird's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to increase debug/test capacity for quicker more efficient execution (**Baird**: column 2, lines 38-40).

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Claim 14

Shapiro, Aho and Baird disclosed the device of Claim 13, further comprising said plurality of data processors (see claim 12).

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (703)305-3305. The examiner can normally be reached 7:30am - 5:00pm Monday thru Thursday and 7:30am - 4:00pm every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-7239 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
June 25, 2004

Kakali Chaki

**KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 210**